Subject: How to plot the magnetic field vector along the trajectory Posted by duxiyu@gmail.com on Wed, 12 Mar 2008 03:05:09 GMT View Forum Message <> Reply to Message

Dear all,

I have the magnetic field data and spacecraft position data.
I want to plot the magnetic field vector along the trajectory.
I think I should first plot the spacecraft trajectory, and then plot the magnetic field vector along the trajectory.
But I do not know which procedure in IDL can perform the second step. Is there anyone who can can help me?

Best wishes, Du

Subject: Re: How to plot the magnetic field vector along the trajectory Posted by David Fanning on Wed, 12 Mar 2008 14:45:56 GMT

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Lasse Clausen writes:

- > We are not throwing away anything, we are merely projecting into the
- > XY plane... ;-) You have to project somewhere as the computer screen
- > is not capable of displaying 3D nor is paper, incidentally. And the
- > usual way to do this kind of thing is to provide three plots, one in
- > the XY plane, one in XZ and one in YZ. You then have to assemble the
- > 3D picture in your head.

Or, you could envision an object graphics solution with an "earth" and "satellite" revolving around it, casting a shadow trajectory onto the earth with a magnetic vector rotating about in the plane of the satellite.

All I'm saying is, the question lacked enough detail, for whatever good reason, to know how to form a sensible answer. And that when you ask better questions, you get-generally--better answers.

I agree that this question was borderline for such a response. Even I could tell English was not the first language. But coming, as it did, at the end of a long day and after several seriously bad questions from the past week, I just thought a reminder might be useful. :-)

Cheers.

```
David
```

_-

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

Coyote's Guide to IDL Programming: http://www.dfanning.com/

Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: How to plot the magnetic field vector along the trajectory Posted by lasse on Wed, 12 Mar 2008 15:09:41 GMT

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On 12 Mar, 15:45, David Fanning <n...@dfanning.com> wrote:

- > Lasse Clausen writes:
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- >> XY plane... ;-) You have to project somewhere as the computer screen
- >> is not capable of displaying 3D nor is paper, incidentally. And the
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> Cheers,

>

> David

- > David Fanning, Ph.D.
- > Fanning Software Consulting, Inc.
- > Coyote's Guide to IDL Programming:http://www.dfanning.com/
- > Sepore ma de ni thui. ("Perhaps thou speakest truth.")

As I said earlier, the question did not lack detail for me because I have seen lots of these kind of plots before, so I was pretty sure

what was asked for. But I can also see that it would be confusing if I hadn't seen these plots before.

More importantly, IDL can do that sort of thing? With shadows and all? Object graphics I hear you say... Mmmm, so far I have ignored everything involving object graphics. Well, maybe one fine day.

Cheers Lasse Clausen

Subject: Re: How to plot the magnetic field vector along the trajectory Posted by jdu on Wed, 12 Mar 2008 15:35:44 GMT View Forum Message <> Reply to Message

Thanks a lot.

I have found the internal procedure 'VELOVECT' which can produces a two-dimensional velocity field plot.

It just meet my request.

It seems that the 'iVector' can also produce the figures I want.

Du

```
On Mar 12, 10:23 pm, Lasse Clausen <la...@lbnc.de> wrote:
> On 12 Mar, 14:26, David Fanning <n...@dfanning.com> wrote:
>
>
>> Lasse Clausen writes:
>>> I found the question perfectly straight forward already from the first
>>> post. Maybe it's to do with the fact that I fiddle with spacecraft
>>> trajectories and magnetic fields every day. Or maybe I'm just in a
>>> better mood than David...
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>> No question I was in a bad mood after wasting most of the
>> afternoon looking for vestiges of earlier IDL installations
>> on my computer, but it seems to me that how you go about
>> adding magnetic vectors depends *entirely* on how you go
>> about plotting the trajectory.
>> In the proposed solution, I see we are just throwing
>> out the Z component of both the trajectory and the vector
>> field. Certainly this is the easiest way to proceed.
>> I just wonder if it is accurate though. :-)
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>> Cheers,
>> David
```

```
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  Alternatively, you can do the whole thing in "3D", using SURFACE to
  establish the coordinate system and then
>
  PLOTS, posx[i]+bx[i], posy[i]+by[i], posz[i]+bz[i], /T3D
>
 to plot the lines.
>
>
> Cheers
> Lasse Clausen
```

Subject: Re: How to plot the magnetic field vector along the trajectory Posted by mankoff on Wed, 12 Mar 2008 17:00:26 GMT View Forum Message <> Reply to Message

```
On Mar 12, 11:09 am, Lasse Clausen <la...@lbnc.de> wrote:
> On 12 Mar, 15:45, David Fanning <n...@dfanning.com> wrote:
>
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- CheersLasse Clausen

Play around with "idldemo". There is a satellite orbiting the earth (I think with Ground Track). The earth is rotating. Clouds are rotating separately from Earth, etc.

Subject: Re: How to plot the magnetic field vector along the trajectory Posted by manodeep@gmail.com on Wed, 12 Mar 2008 21:30:51 GMT View Forum Message <> Reply to Message

Hello Du,

For a 2-d projection, try partvelvec.pro (http://www.astro.washington.edu/deutsch-bin/getpro/library32.html?P ARTVELVEC)

velovect needs your data to be in a 2-d array format instead of the scattered data points that you have.

Alternatively, the plots solution with a previous call to scale3 to

establish the axis and the ranges should also be sufficient.

Cheers, Manodeep

```
On Mar 12, 10:35 am, jdu <jdu.u...@gmail.com> wrote:
> Thanks a lot.
> I have found the internal procedure 'VELOVECT' which can produces a
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> It just meet my request.
> It seems that the 'iVector' can also produce the figures I want.
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>>> Cheers,
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> PLOTS, posx[i]+bx[i], posy[i]+by[i], posz[i]+bz[i], /T3D
> to plot the lines.
> Cheers
> Lasse Clausen
```

Subject: Re: How to plot the magnetic field vector along the trajectory Posted by duxiyu@gmail.com on Thu, 13 Mar 2008 12:40:35 GMT View Forum Message <> Reply to Message

I am not sure what the 'idldemo' means and cannot find its information in IDL Help.

Could you introduce it in detail?

Du

```
On Mar 13, 1:00 am, mankoff <mank...@gmail.com> wrote:
> On Mar 12, 11:09 am, Lasse Clausen <la...@lbnc.de> wrote:
>
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>> On 12 Mar, 15:45, David Fanning <n...@dfanning.com> wrote:
>>> Lasse Clausen writes:
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> Play around with "idldemo". There is a satellite orbiting the earth (I
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> separately from Earth, etc.
```

Subject: Re: How to plot the magnetic field vector along the trajectory Posted by duxiyu@gmail.com on Thu, 13 Mar 2008 12:42:56 GMT View Forum Message <> Reply to Message

Thank you, Manodeep, It is very useful for me.

Du

On Mar 13, 5:30 am, Manodeep Sinha <manod...@gmail.com> wrote: > Hello Du, >

```
> For a 2-d projection, try partvelvec.pro (
http://www.astro.washington.edu/deutsch-bin/getpro/library32 .html?PARTVELVEC)
> velovect needs your data to be in a 2-d array format instead of the
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>>> to plot the lines.
>>> Cheers
>>> Lasse Clausen
```

Subject: Re: How to plot the magnetic field vector along the trajectory Posted by mankoff on Thu, 13 Mar 2008 13:33:29 GMT

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```
On Mar 13, 8:40 am, "dux...@gmail.com" <dux...@gmail.com> wrote:
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> Could you introduce it in detail?
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>> Play around with "idldemo". There is a satellite orbiting the earth (I
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>> separately from Earth, etc.
```

Type "idldemo" at the *nix CLI, or "demo" at the IDL> prompt in IDL to see the demo.